

3.0 AFFECTED ENVIRONMENT

3.6 Flooding and Hydrology

Precipitation and Flooding Potential. The San Bernardino, San Jacinto, and Santa Rosa Mountains effectively isolate the Coachella Valley from moist, cool maritime air masses coming on shore from the west. As a result, the region is characterized by a subtropical desert climate with hot, dry summers and mild winters. Mean annual rainfall is very low on the valley floor, typically ranging from four to six inches per year. In some years, no measurable rainfall has been reported. Typically, there is little or no streamflow in regional drainages, as climatic and drainage conditions are not conducive to continuous runoff. However, runoff and occasional flooding do occur during and immediately following rainstorms, and rainfall on surrounding mountains generally increases with elevation.

Precipitation generally occurs during winter months, from November through March. However, high-intensity thunderstorms can also occur from mid-summer through early fall. Such storms are capable of generating substantial quantities of rainfall in short periods of time, thereby increasing the risk for flash floods. Flash flooding is generally limited to washes extending from canyons, floodways and floodplains adjacent to rivers and streambeds, and low-lying drainages. However, flooding on alluvial fans can be particularly damaging because floodwaters move at high velocities and spread across wide, unchannelized areas.

Flooding can also result when unusually warm temperatures in early spring cause the snow pack on surrounding mountains to melt quickly. In fact, most surface water in the Coachella Valley is derived from snowmelt off the slopes of the San Bernardino, Little San Bernardino, and San Jacinto Mountains. The water is usually absorbed by porous sands and gravels on the valley floor. However, if surface sediments are already saturated, additional runoff can remain on the surface and result in minor to major flooding.

Historic weather reports indicate that major storm events have occurred in the Coachella Valley. Benchmark storms recorded by the Army Corps of Engineers include the storm of September 24, 1939, which was centered over Indio and generated 6.45 inches of rain in a 6-hour period. Tropical storm Kathleen, which occurred on September 9–11, 1976, generated heavy rainfall in Riverside, San Bernardino, and Imperial Counties. The mountains and hillsides of the Coachella Valley received as much as 14 inches of rainfall, which drained onto the valley floor and caused extensive flooding and property damage.

Whitewater River Basin. The fluvial system of the Coachella Valley consists largely of ephemeral stream channels or washes, which originate in the surrounding mountains and drain into large alluvial fans that spread onto the valley floor. Most runoff is generated within the San Bernardino, Little San Bernardino, and San Jacinto Mountains west and north of the valley.

The Whitewater River is the primary drainage facility for the Coachella Valley. It emanates from the San Bernardino Mountains at the northwesterly edge of the planning area, flows southeast to La Quinta, northeast to Indio, and drains into the Salton Sea. It extends a total of 70 miles and drains an area containing roughly 400 square miles of valley land and 1,550 square miles of mountains ranges, including the San Bernardino, Little San Bernardino, San Jacinto, and Santa Rosa Mountains.¹ Its tributaries are numerous and include the following: San Gorgonio River, Palm Canyon Creek, Deep Canyon Creek, Palm Valley Channel, Thousand Palms Canyon, West Wide Canyon, East Wide Canyon, Deception Canyon, Edom Hill Creek, Pushwalla Canyon, Snow Creek, Dead Indian Creek, Magnesia Springs, Cathedral Creek, Andreas Creek, Chino Creek, Tahquitz Creek, Bear Creek, and Mission Creek.

Roughly from Windy Point to Indian Avenue, the Whitewater River channel broadens into a low-lying floodplain that measures more than a mile in width. As it nears Cathedral City, the Whitewater River narrows and becomes a partially improved channel known as the Whitewater River Stormwater Channel, which protects urban development from potential flooding. East of Washington Street in La Quinta, the Whitewater River consists of a man-made channel known as the Coachella Valley Stormwater Channel.

FEMA Flood Hazard Areas. The Federal Emergency Management Agency (FEMA) is responsible for the analysis and mapping of areas prone to major flooding in the United States. Within the Coachella Valley, the 100-year floodplain generally occurs on and at the base of washes and alluvial fans, such as Mission Creek and the Morongo Wash in Desert Hot Springs, the Magnesia Springs Canyon alluvial fan in Rancho Mirage, and along Little Morongo, Big Morongo, and Smith Canyon Creeks in the Morongo Valley portion of the planning area. It is also contained within man-made channels, such as the Whitewater River/Coachella Valley Stormwater Channel and the La Quinta Evacuation Channel. Areas of 500-year flood inundation typically occur adjacent to the outer edges of the 100-year floodplain. Higher-elevation hills and mountain slopes are subject to only minimal flooding, as are those portions of the central valley floor, which occur at some distance from canyons and washes.

Stormwater Management Responsibilities. Regional stormwater management in the Riverside County portion of the CDCA planning area is the responsibility of the Coachella Valley Water District (CVWD) and the Riverside County Flood Control and Water Conservation District. The Coachella Valley Water District encompasses nearly 640,000 acres, primarily within eastern Riverside County, but also extending into Imperial and San Diego Counties. The Whitewater River/Coachella Valley Stormwater Channel is CVWD's principal stormwater management facility in the Coachella Valley. The Riverside County Flood Control and Water Conservation District has jurisdiction over approximately 2,700 square miles, primarily in western Riverside County, but

¹ "Whitewater River Basin Draft Feasibility Report and Environmental Impact Statement," Los Angeles District, Army Corps of Engineers, June 2000.

including the westerly portion of the Coachella Valley and Anza-Borrego portions of the CDCA planning area. It owns and operates 40 dams and several hundred miles of storm drains, channels and levees. Regional stormwater management in the Morongo Valley portion of the CDCA planning area is the responsibility of the San Bernardino County Flood Control District. Individual cities are responsible for smaller-scale, localized stormwater management issues within their boundaries, including the construction of storm drains on urban streets and site-specific detention/retention basins.

Flood Management Improvements. A wide range of regional flood control improvements, including dams, debris basins, and concrete-lined channels, have been constructed throughout the Coachella Valley in an effort to protect life and property from flooding hazards, particularly the 100-year flood. Smaller-scale improvements have been constructed to protect specific neighborhoods and communities from flood flows and to convey mountain runoff to the Whitewater River.

No major flood control facilities have been constructed in the Anza-Borrego or Morongo Valley portions of the CDCA planning area. Although the San Bernardino County Flood Control District's Drainage Master Plan includes preliminary plans for flood control channels along the Big and Little Morongo Creeks in Morongo Valley, the District has no intentions of constructing any improvements in the near term.²

Stormwater Runoff Pollution Control. Runoff from developed land has the potential to contaminate and introduce pollutants to surface and ground waters. The federal Clean Water Act of 1972 establishes a strategy to restore and maintain water quality by reducing "point source pollution," including pollutants from industry and sewage treatment facilities. Section 404 of the Act grants the U.S. Army Corps of Engineers with the authority to evaluate and approve development projects that could potentially impact waters of the United States.

In 1987, amendments to the Clean Water Act shifted the focus of polluted runoff and required states to reduce discharges to the waters of the United States. These amendments required the U.S. Environmental Protection Agency to formally regulate polluted runoff utilizing a permit system under the National Pollutant Discharge Elimination System (NPDES). The NPDES program requires communities to apply for municipal permits to eliminate or control "non-point source pollution." In California, the state is responsible for administering the NPDES permitting program. In the Coachella Valley region, this task is the responsibility of the Colorado River Basin Regional Water Quality Control Board.

² Mona Sadek, Flood Control Section, Planning Department, County of San Bernardino, personal communication, March 22, 2002.